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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/052,623

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05/21/2004

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EXAMINER

LEFLORE, LAUREL E

ART UNIT

PAPER NUMBER

2673

6

DATE MAILED: 05/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/052,623

Applicant(s)

CHOU ET AL.

Examiner

Laurel E LeFlore

Art Unit

2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 11-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 11-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 11-16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 11 recites the limitation "the display portion" in line, "the non-display portion" in line 12, and "the external power and signal supply" in lines 10 and 12.. There is insufficient antecedent basis for these limitations in the claim.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claims 1-3 and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawanobori 6,621,520 B1.
6. In regard to claim 1, Sawanobori discloses a power-saving Liquid Crystal Display (LCD) driving method, comprising: separating display and non-display zones on a LCD display panel; supplying an external power to lamps lighting the display zones; and stopping the external power to a lamp lighting the non-display zones.

See figure 2 and column 2, lines 27-36, disclosing, "FIG. 2 is a view showing an image exhibited by the LCD panel 21 of the display unit 20. The photographed image is

displayed in a image display area E1...The symbolic information...are displayed on an information display area E2."

Further see column 3, lines 5-13, disclosing, "The main back-light unit 22 and the sub-back-light unit 23 are independently driven. When the photographed image is displayed on the LCD panel 21, both the main back-light unit 22 and the sub-back-light unit 23 are driven, thus the image is illuminated together with the symbolic information. When only the symbolic information is to be displayed, only the sub-back-light unit 23 is driven and the main back-light unit 22 is not driven, thus electric power consumption is minimized." Thus, display area E1 is a non-display zone separated from display area E2, a display zone. It is inherent that driving or not driving a backlight includes supplying an external power or stopping an external power, respectively.

Sawanobori does not disclose that there are plural lamps lighting the non-display zone, display area E1. See column 2, lines 39-40, disclosing, "the main back-light unit 22 includes a fluorescent lamp light source 22b".

However, Sawanobori does disclose that there are plural lamps are lighting the display zone. See column 2, lines 62-64, disclosing "The sub-back-light unit 23 includes a plurality of light emitting diodes (LEDs) 23a linearly aligned behind the information display area E2. One LED consumes less than 10% of an electric power consumed by the main back-light unit 22. Thus, the sub-back-light unit 23, consisting of two or three LEDs has significantly a lower electric power consumption in comparison with that of the main back-light unit 22. While the power in the digital camera 10 is turned on, the information display area E2 is illuminated by the sub-back-light unit 23."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Sawanobori by using the a plurality of light emitting diodes as the backlight for both the sub-backlight unit and the main backlight unit. One would have been motivated to make such a change based on Sawanobori's teaching that a backlight which uses LEDs instead of a fluorescent lamp "has significantly lower electric power consumption".

Further, having more than one fluorescent lamp as the backlight of the main unit would be a matter of design choice, based on the advantages and disadvantages of having one or more lamps. For instance, more fluorescent lamps would make the backlight brighter, while consuming more power. To duplicate parts for a multiple effect is obvious (*St Regis Paper Co. v. Bemis Co., Inc.*, 193 USPQ 8 (7th Cir. 1977)).

7. In regard to claims 2 and 3, see rejection of claim 1.

8. In regard to claim 11, Sawanobori further discloses supplying the external power and signal supply to the display portion of the LCD display matrix circuit and stopping the external power and signal supply to the non-display portion of the LCD display matrix circuit. See rejection of claim 1, disclosing supplying the external power and signal supply to the display portion of the LCD display matrix circuit and stopping the external power to the non-display portion of the LCD display matrix circuit. To display symbolic information, it is inherent that there is a signal supply to the display.

Sawanobori further discloses stopping the signal supply to the non-display portion. See column 4, lines 30-31, disclosing, "the display of the still image in the area E1 is stopped". Stopping display inherently includes stopping signal supply to the display.

9. In regard to claims 12 and 13, see rejection of claim 1.

10. In regard to claim 14, Sawanobori discloses a signal controller that is used to control whether or not the external power is supplied to the LCD display matrix. See figure 4. The CPU 40 is a signal controller. Note that the CPU transfers signals to the LCD signal processor 61, as indicated by the arrow in figure 4, which is an LCD display matrix circuit. Further see column 4, lines 30-31, disclosing, "the display of the still image in the area E1 is stopped". This stopping of the display, which includes stopping signal supply to the display (see rejection of claim 11), must inherently be done by LCD signal processor, as it is connected to the LCD 21, as depicted in figure 4.

Further, see power switch 59 of figure 4, and column 3, lines 60-64, disclosing, "The electric power of the battery 46 is supplied, through a DC/DC converter 45 for stabilizing the electric power, to the components. The power switch 59 is connected to an output of the DC/DC converter 45 for switching the electric power."

This power switch constitutes a signal controller that is used to control whether or not the external power is supplied to the components, and thus, to the LCD display matrix.

11. In regard to claim 15, Sawanobori discloses that the output of the signal controller is a control signal for determining if the LCD display matrix circuit is active. See rejection of claim 14, which discloses that the signal controller is CPU 40. See column 4, lines 41-47, disclosing, "On starting the "slide" mode, the main back-light unit 22 is turned off, and is driven again when the still images are started to be displayed. Since the main back-light unit 22 is driven only when the image is displayed in the image display area E1, the electric power consumption is minimized." Thus, it is

inherent that some control signal determines if the LCD display matrix is active, since the main backlight is only driven when it is active. Note in figure 4 that CPU 40, the signal controller, is the only link between the LCD display matrix circuit and the main backlight unit.

12. Claims 4, 5 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawanobori 6,621,520 B1 in view of Burton 6,529,182 B1.

13. In regard to claims 4, 5 and 16, Sawanobori discloses an invention similar to that which is disclosed in claims 4, 5 and 16. See rejections of claims 1 and 11 for similarities. Sawanobori does not disclose that a regulator is used to adjust power externally supplied to lamps lighting the non-display zone, wherein output of the regulator is a control signal for operating the lamps. See rejection of claim 1, disclosing that lamps lighting the non-display zone can be LEDs.

Burton discloses an invention in which a regulator is used to adjust power externally supplied to lamps lighting the non-display zone, wherein output of the regulator is a control signal for operating the lamps. See figure 1 and column 1, lines 63-64, disclosing, "FIG. 1 is a schematic diagram of an LED current control circuit" and column 2, lines 6-7, disclosing "The circuit of FIG. 1 is commonly known in the art as a 'buck regulator'."

Burton further teaches in column 1, lines 12-25, "Liquid Crystal Displays (LCDs) often incorporate backlight panels for to permit viewing in poor lighting conditions. The use of LEDs (Light Emitting Diodes) is known for the purpose of illuminating such LCD displays...In order to properly control the amount of illumination it is necessary to

control the current passing through the LEDs. Since each of the LEDs is characterized by a voltage drop of from 2.0 V to 2.5 V, it is not possible to provide a controlled current supply from a standard 5 V supply voltage rail. Thus, according to one prior art approach a linear voltage regulator has been configured to function as a current source for the LEDs".

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Sawanobori by using a regulator to adjust power externally supplied to lamps lighting the non-display zone, wherein output of the regulator is a control signal for operating the lamps, as in the invention of Burton. (Supplying a voltage that operates the lamps is understood to be a control signal for operating the lamps.) One would have been motivated to make such a change based on the teachings of Burton that "it is necessary to control the current passing through the LEDs" and since the teachings of Burton indicate that it is common and conventional to include some type of regulator when operating LEDs of a LCD backlight.

Response to Arguments

14. Applicant has amended the specification and drawings to overcome the objections of Paper No. 4 to the specification and drawings. The objections to the specification and drawings are withdrawn.

15. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sakaguchi et al. 6,448,951 B1 discloses an invention in which the backlight of an LCD is divided into section that light at different times.

May 6,111,560 discloses an invention in which the backlight of an LCD emits light from selected regions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laurel E LeFlore whose telephone number is (703) 305-8627. The examiner can normally be reached on Monday-Friday 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (703) 305-3885. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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14 May 2004



JOSEPH MANCUSO
PRIMARY EXAMINER